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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,356	04/08/2004	Samaresh Mohanta	100770.0020US1	1203
34284	7590	07/20/2007		
Rutan & Tucker, LLP. Hani Z. Sayed 611 ANTON BLVD SUITE 1400 COSTA MESA, CA 92626			EXAMINER WILKINS III, HARRY D	
			ART UNIT 1753	PAPER NUMBER
			MAIL DATE 07/20/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/821,356

Applicant(s)

MOHANTA ET AL.

Examiner

Harry D. Wilkins, III

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-26 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 and 26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 4-11 and 17-20 is/are allowed.
- 6) ☒ Claim(s) 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly amended claims 12-16 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The previously elected invention (claims 1-11 and 17-25) and the newly amended invention (claims 12-16) are related as apparatus and the process of operating an apparatus. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice a materially different process, such as a process which operates with laminar flow of electrolyte (i.e.- Reynolds number below 2000).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 12-16 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

2. Applicant's confirmation of the previous election without traverse of Group I (claims 1-25) in the reply filed on 5 June 2007 is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1753

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 21-25 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Edson (US 4,585,539).

Edson anticipates the invention as claimed. Edson teaches (see figures 1, 2 and 6, and at least col. 1, line 66 to col. 2, line 35 and col. 6, lines 37-47) an electrolytic cell including a first container (24) containing a catholyte, with a cathode (18) disposed within the catholyte, a pump (82) fluidly coupled to the first container and moving the catholyte across the cathode at a predetermined flow velocity, a second container (28) containing an anolyte, wherein the second container is at least partially disposed within the catholyte, wherein the second container included a separator (22) that separated the anolyte and catholyte, with an anode (20) disposed within the anolyte. The cathode and the second container are positioned relative to each other such that a flow path between the second container and cathode is formed from which metal from the catholyte is deposited onto the cathode. With respect to the limitation that the deposition occurs at non-current limiting, Applicant describes (see page 4, lines 1-5) that this condition is proportional to the Reynolds number of the catholyte flowing past the cathode as well as the metal ion concentration. Thus, because Edson teaches using turbulent flow of the catholyte, it inherently produces the claimed "non-current limiting conditions".

With respect to the limitation that the catholyte comprises "optionally, a metal in complex with a complexing agent", this limitation is related to the intended use of the

claimed structure. See MPEP 2114 and 2115. Edson teaches an identical structure, which structure would have been capable of operating with a metal-complex containing solution.

Regarding claim 21, Edson teaches (as above) an electrolytic cell including an anode, cathode, both in electrical contact with an electrolyte, and a pump fluidly connected to the electrolytic cell and moving the electrolyte within a flow path located between the anode and cathode at a predetermined flow velocity such that metal was deposited on the cathode.

With respect to the limitation that the metal "is plated onto the cathode in form of a smooth film", this limitation is related to the intended use of the claimed structure. See MPEP 2114 and 2115. Edson teaches an identical structure, which structure would have been capable of operating to form a smooth film of deposited metal.

Regarding claims 23 and 24, Edson teaches (see col. 11, lines 4-19, particularly lines 13-15) that the apparatus was capable of operating to remove metal from the catholyte solution down to about 2 ppm.

Regarding claims 22 and 25, the apparatus of Edson would have been capable of operating at conditions (different pump speed) such that the metal from the solution was deposited in any desired form, including a smooth film, a powdery deposit or a dendritic form.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1753

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21-25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frischauf et al (WO 01/96631) in view Edson (US 4,585,539).

Frischauf et al teach (see figure 1 and abstract) utilizing a modular electrolytic cell design including a first container (14) containing a catholyte (16) and a cathode (18) and a second container (22), including an ion-exchange member (26), anolyte (28) and an anode (30), removably disposed within the first container (14). The apparatus of Frischauf et al was designed for electroplating of substrates.

Edson teaches (see at least col. 1, line 66 to col. 2, line 35 and col. 3, lines 16-19) that providing turbulent flow above a certain linear velocity adjacent a cathode in an electrodeposition process provided certain advantages such that the Nernst layer adjacent the cathode did not become depleted, thereby increasing the current density (i.e.-faster reaction rate) capable of being applied without adverse side effects.

One of ordinary skill in the art of electrochemistry would have realized that the electroplating process of Frischauf et al was equivalent to the recovery process of Edson because both result in a net deposition of material on the cathode from an electrolyte.

Therefore, it would have been obvious to one of ordinary skill in the art to have added circulation of electrolyte, in particular catholyte, to the apparatus of Frischauf et al as suggested by Edson for the purpose of increasing effective current density to thereby increase reaction rate. The circulation would have been achieved by adding a pump

Art Unit: 1753

fluidly coupled to the first container and moving the catholyte across the cathode at a predetermined flow velocity.

With respect to the limitation that the catholyte comprises "a metal in complex with a complexing agent", this limitation is related to the intended use of the claimed structure. See MPEP 2114 and 2115. Frischauf et al in view of Edson teach an identical structure, which structure would have been capable of operating with a metal-complex containing solution.

Regarding claim 21, the cell of Frischauf et al included (as above) an anode, cathode and electrolyte, wherein the anode and cathode were positioned to form a flow path between them. Edson provides the suggestion to one of ordinary skill in the art to add a pump to the apparatus for the purpose of moving the electrolyte past the cathode with sufficient velocity to permit non-current limiting conditions for the deposition at the cathode.

With respect to the limitation that the catholyte comprises "a metal in complex with a complexing agent, wherein the metal is present in the electrolyte at a concentration of less than 5000 ppm", this limitation is related to the intended use of the claimed structure. See MPEP 2114 and 2115. Frischauf et al in view of Edson teach an identical structure, which structure would have been capable of operating with a metal-complex containing solution.

With respect to the limitation that the metal "is plated onto the cathode in form of a smooth film", this limitation is related to the intended use of the claimed structure. See MPEP 2114 and 2115. Frischauf et al in view of Edson teach an identical

Art Unit: 1753

structure, which structure would have been capable of operating to form a smooth film of deposited metal.

Regarding claims 23 and 24, Edson teaches (see col. 11, lines 4-19, particularly lines 13-15) that the apparatus was capable of operating to remove metal from the catholyte solution down to about 2 ppm.

Regarding claims 22 and 25, the apparatus of Frischauf et al in view of Edson would have been capable of operating at conditions (different pump speed) such that the metal from the solution was deposited in any desired form, including a smooth film, a powdery deposit or a dendritic form.

7. Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edson (US 4,585,539) in view of Applicant's admission of prior art and Kingsley et al (US 5,316,751).

If the limitation that the catholyte and anolyte comprises specific materials were to be given some patentable weight, then the teachings of Edson would be considered deficiently only for the lack of using a sulfuric acid plus lead-EDTA complex solution as the catholyte and sulfuric acid as the anolyte.

However, Applicant's admission of prior art, on page 1 of the specification clearly admits that formation of lead-EDTA solutions was known for treating lead-contaminated soils. Kingsley et al is disclosed as teaching the leaching of lead from soil using EDTA. Kingsley et al teach (see col. 10) that the formed solution included EDTA-complexed metal ions and sulfuric acid.

Since Edson teaches that the electrolytic cell was capable of operating to recover lead from solutions, even at low concentrations, one of ordinary skill in the art would have found it obvious to have used the lead-EDTA solution of Applicant's admission as the catholyte in the electrolytic cell of Edson for the purpose of recovering the lead from the contaminated soil.

Otherwise, all claims are rejected for identical reasons as stated above, with the following exceptions.

Allowable Subject Matter

8. Claims 1, 4-11 and 17-20 are allowed.

Response to Arguments

9. Applicant's arguments filed 5 June 2007 have been fully considered but they are not persuasive. Applicant has argued that:

- a. The limitation of a metal in the electrolyte is not an intended use but a structurally distinguishable element of the device.

In response, Applicant's argument is not persuasive. Apparatus claims are limited by the claimed structure. The structure is not limited by the composition of liquid placed within the structure. Such feature relates to how the structure is utilized, i.e.-the intended use. See MPEP 2114 and 2115.

- b. The recitation of the pump configuration is a structural limitation in terms of the function performed, which should not be considered an intended use.

In response, the prior art (Edson) teaches a pump, and that the pump was capable of achieving turbulent flow within the flow path adjacent the cathode (see col. 5,

lines 32-55). With respect to the limitation that the deposition occurs at non-current limiting, Applicant describes (see page 4, lines 1-5) that this condition is proportional to the Reynolds number of the catholyte flowing past the cathode as well as the metal ion concentration. Thus, because Edson teaches using turbulent flow of the catholyte, it inherently produces the claimed "non-current limiting conditions". Thus, this function is met by the prior art.

Conclusion

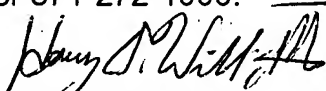
10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 7:45am-4:15pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Harry D Wilkins, III
Primary Examiner
Art Unit 1753

hdw